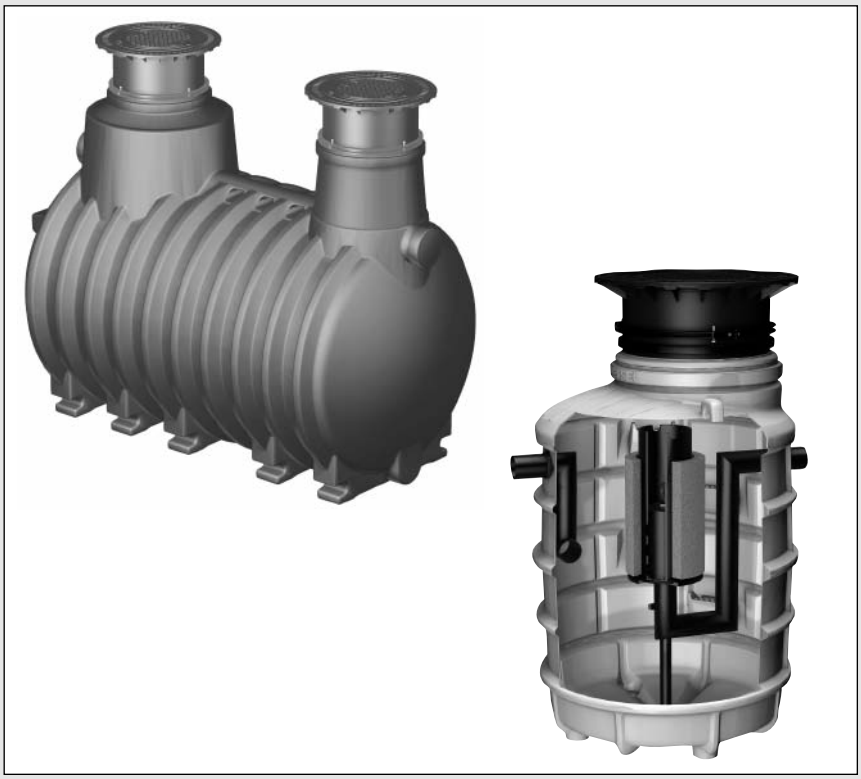
INSTALLATION AND OPERATING INSTRUCTIONS

KESSEL – Oil / Fuel separator
KESSEL – Coalescence separator

PE Separators according to Euro-norm EN 858 NS 3-15

KESSEL – Oil / Fuel separator
KESSEL – Coalescence separator
According to EN 858
NG 3-15 for underground installation

99 403 - 99 615 (.10/.15/.30/.80) (B/D)
99 503 - 99 715 (.10/.15/.30/.80) (B/D)
99 703 (.04/.10) (B/D)
99706.10 (B/D



Product advantages

- **Easy on-site mobility without the need for heavy machinery**
- **Simple and quick installation and hook up**
- **Recyclable material**
- **Seamless body due to monolith construction – 100% watertight**

☐ **Installation** ☐ **Commissioning** ☐ **Instruction**

The installation and service of this unit should be carried out by a licensed professional servicer

Name Date Town

Company - Telephone No.

Subject to technical amendment

Edition 2009/11

ID number 010-619

KESSEL

1. Safety Instructions

Personnel used for installation, assembly, operation, maintenance and repair must have the corresponding qualifications for such work. Areas of responsibility and the supervision of personnel must be clearly specified by the operator.
The operating safety of the system supplied is only ensured in the event of proper use. The limit values specified in the technical data must not be exceeded under any circumstances.
Accident prevention regulations and the applicable standards and directives must be observed at all times during installation, assembly, operation, maintenance and repair of the system!

These include:
- Accident prevention regulations
  - Construction work, BGV C22
  - Waste water systems, GUV-V C5
- Safety regulations for work in enclosed areas of waste water systems, GUV-R 126
- Handling of biological materials in waste water systems, GUV-R 145
- Directives for work in tanks and restricted areas, BGR 117
- Standards
  - Construction pits and ditches - Embankments, shoring, working area widths, DIN 4124
  - Laying and testing of waste water pipes and channels, DIN EN 1610
- Work aids for safety and health protection in waste water systems.

ACCESS:
NO SMOKING! Smoking is strictly prohibited near or around the separator at all times !
All sources of ignition or sparks are prohibited near or around the separator at all times !

SLIPPERY WHEN WET! Take caution when standing / walking near the separator. During disposal, cleaning and maintenance the surrounding area can become extremely slippery due to spilled oil / fuel.

- Dangers from gases and vapours such as the danger of suffocation, poisoning or explosion
- Danger of falling
- Danger of drowning
- Fecal pollution in waste water containing faeces
- High physical and psychic stresses of work in deep, restricted or dark areas
- and others

Failure to observe these operating instructions may result in substantial material damage, physical injuries or fatal accidents.

The system constitutes one component of an overall system. The operating instructions of the overall system and the individual components must therefore also be observed. During all assembly, maintenance, inspection and repair to any of the components, the overall system must be shut down and secured against restarting.

Conversion or modifications to the system must only be made after consultation with the manufacturer. Original spare parts and accessories approved by the manufacturer must be used in order to ensure safety. The use of other parts may invalidate liability for the resulting consequences.

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Dear Customer,

Before the KESSEL Oil / Fuel or Coalescence separator is installed and placed in operation please carefully read and follow all of the instructions contained in this Installation, Maintenance and User's Manual.
Upon delivery of the KESSEL separator please thoroughly inspect the separator to make sure that it has not been damaged during shipping. In case damage has occurred to the separator, please follow the instructions listed in the, Guarantee section of this user's manual.

2. General

2. General

2.1 Area of application
The separators are intended for use under specified conditions, see the Chapter “Installation and assembly”, for installation underground or below the foundation slab in well-ventilated areas.

2.1.1 Oil-fuel separators to Separator Class II
The separators can be used:
a) for the treatment of rainwater contaminated with light fluids from surfaced areas, e.g. filling stations, oil storage and handling areas, parking areas and streets in water protection areas

b) as a retaining system for light fluids from systems and areas where light fluids are handled, e.g. filling stations, oil storage and handling areas

c) for preliminary separation of light fluids from waste water before further treatment in subsequent internal waste water treatment plants.

In cases a) and b), the discharged water from the separators is intended to be fed back into the public drainage system.

If the discharged water is to be returned into waters, this is only possible in individual cases following clarification with the local water authority.

In the treatment of dirty water contaminated with light fluids (commercial waste water) or waste water from the application areas of Appendix 49 of the waste water regulations, the observation of a limit value for hydrocarbons of 20 mg/l cannot be considered to have been observed.

2.1.2 Oil-fuel separators to Separator Class I

Separators for light fluids with coalescence device can be used:
a) for the treatment of rainwater contaminated with light fluids from surfaced areas, e.g. filling stations, oil storage and handling areas, parking areas and streets in water protection areas,

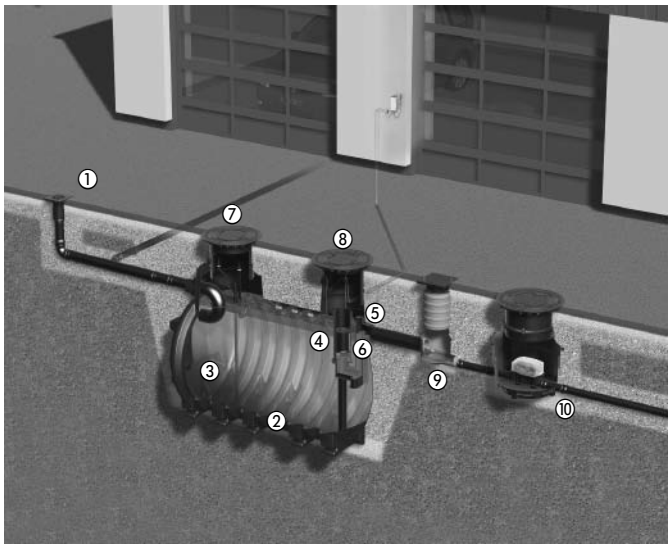
b) as a retaining system for light fluids for the safety of systems and areas where light fluids are handled, e.g. filling stations, oil storage and handling areas,

c) for the treatment of dirty water contaminated with light fluids (commercial waste water) produced taking into account the operating conditions of industrial processes, the cleaning of parts contaminated with oil and the cleaning of floor areas contaminated with oil (except workshop floors),

d) for the treatment of waste water produced taking into account the operating conditions of automatic vehicle cleaning (partial flow: outlet from the closed circuit into the drainage system), manual cleaning (vehicle washing, engine washing, underbody washing, chassis cleaning in washing bays, self-service or commercial washing bays - except for the cleaning of workshop floors contaminated with oil) and for the drainage of areas used for the receipt, storage, drying, dismantling and crushing of old vehicles,

e) for preliminary separation of light fluids from waste water before further treatment in subsequent internal waste water treatment plants.

3. Installation



In cases a) to d), the discharged water from the separators is intended to be fed back into the public drainage system.
If the discharged water is to be returned into waters, this is only possible in individual cases following clarification with the local water authority.

Separators used in case d) are used in systems for the restriction of hydrocarbons in waste water containing mineral oil in the sense of Part E Paragraph 2 of Appendix 49 of the waste water regulations.

The level of hydrocarbons required by regulations in cases c) and d) of 20 mg/l is considered to have been observed.

2.2 System description

The illustration shows a fuel separator cistern installed in the ground of Class A/B.
① Outlet point without stench trap
② Light fluid separator
③ Inlet with stench trap
④ Outlet with self-actuating closure
⑤ Guide tube
⑥ Float
⑦ Attachment piece
⑧ Cover
⑨ Sample removal shaft
⑩ Backwater valve

2.3 Functional description

The separators separate light fluids and sludge out of the waste water by means of gravity. Light fluids refers to fluids of mineral origin with a density of ≤ 0.95 g/cm3, which are insoluble or only slightly soluble in water, and which are non-saponifiable. These do not include stable emulsions, fats and oils of vegetable or animal origin. Light fluids float up in the separation chamber and collect at the surface. Sludges, which are heavier than water, sink to the bottom and form a sludge layer.
Coalescence separators, like oil-fuel separators, work on the principle of gravity. To increase the separation performance, the tank also contains a coalescence insert. This cylindrical insert has two functions. Firstly, it affects the flow in the separator, and secondly it “filters” all the waste water through the coalescence material.
When waste water containing oil flows through this filter fabric, very fine oil droplets that can no longer be separated out by gravity collect on the coalescence material, and combine to form large oil droplets. When these reach a sufficient size to create buoyancy, they detach themselves from the filter material and rise to the surface.
Light fluid separators are equipped as standard with a self-actuating closure.
When the maximum oil storage volume is exceeded, this device closes the outlet into the drainage system. This prevents the escape of light fluids into the drainage system. This safety device consists of a guide tube full of water, which houses a float.
The float is carefully designed with regard to its weight, so that it floats in water, and sinks in light fluid (up to a density of 0.95 g/cm3). When the maximum oil storage quantity is reached, oil flows through the lateral openings into the float guide tube. The float then sinks, reliably shutting off the outlet of the separator.
The self-actuating closure of a separator is an “emergency closure valve”. When actuated in an emergency, the separator must be taken out of service and maintained.

3. Installation

3.1 Installation example: KESSEL Oil / Fuel Separator

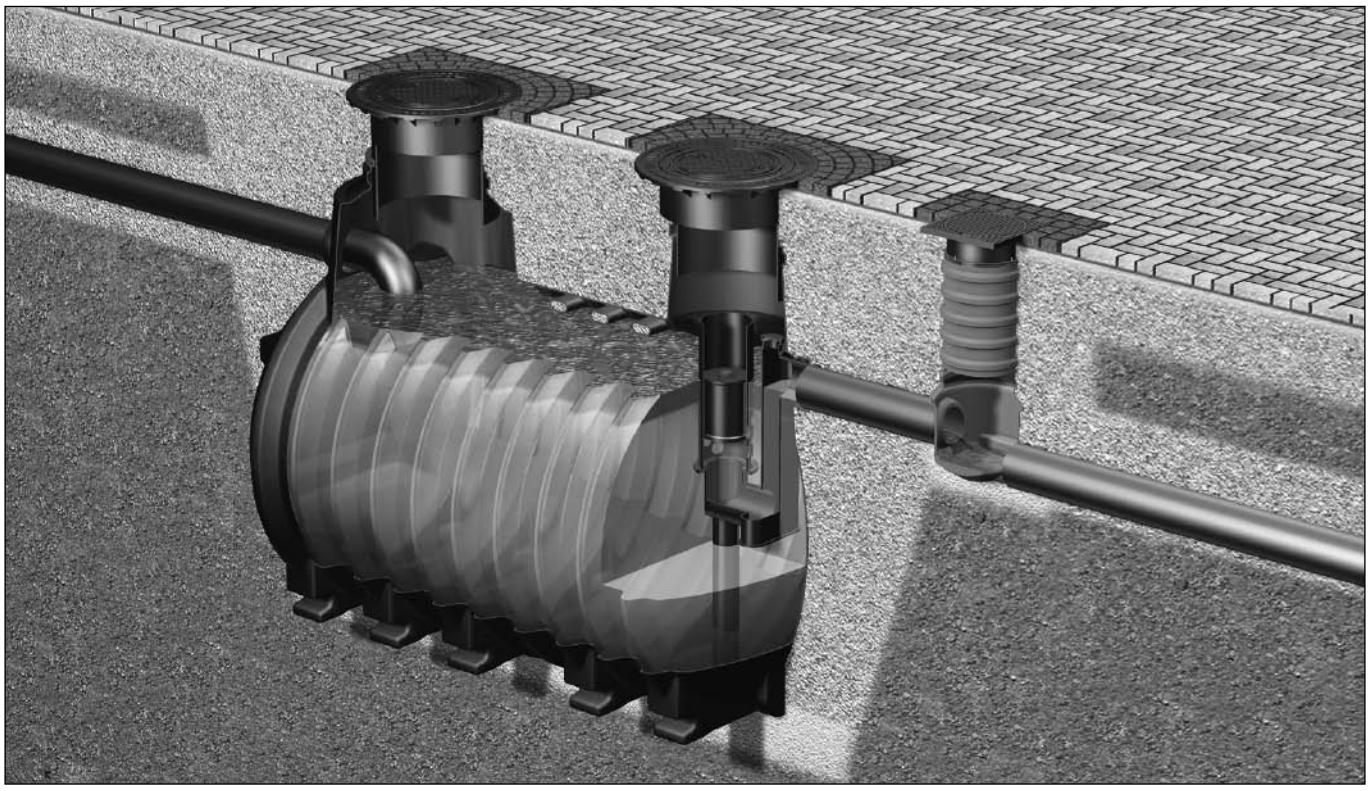
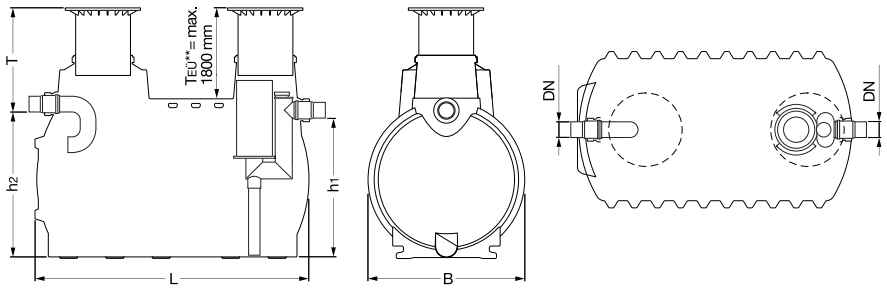


Illustration shows KESSEL-oil-/fuel separator class II with cover class B and sampling chamber.

3.2 Dimensioned drawing



DN 150: T-$T_{EÜ}$ = 155 mm
DN 200: T-$T_{EÜ}$ = 180 mm
T-$T_{EÜ}$ = Height above ground
Class D: 700 mm ≤ $T_{EÜ}$ ≤ 1.500 mm
Class A/B: 700 mm ≤ $T_{EÜ}$ ≤ 1.800 mm

NS	Sludge trap (l)	DN	L in mm	B in mm	T in mm min	T in mm max	h_2 in mm	h_1 in mm	Total volume (l)	Oil storage (l)	Overstand (mm)	Weight (Kg)	Cover class	Art No.
3	1000	150	2080	1200	830	1240	1100	1040	1800	187	50	379	A/B	**99403.10B**
3	1000	150	2080	1200	840	1100	1100	1040	1800	187	50	635	D	**99403.10D**
6	2500 [1]	200 [2]	2300	1760	850	1230	1630	1560	4300	265	70	519	A/B	**99606.30B**
6	2500 [1]	200 [2]	2300	1760	850	1090	1630	1560	4300	265	70	775	D	**99606.30D**
6	5000	200 [2]	3060	1760	870	1250	1630	1560	5800	380	100	594	A/B	**99606.80B**
6	5000	200 [2]	3060	1760	870	1090	1630	1560	5800	380	100	850	D	**99606.80D**
10	1500	150	2860	1200	830	1240	1100	1040	2600	262	70	424	A/B	**99610.15B**
10	1500	150	2860	1200	840	1100	1100	1040	2600	262	70	680	D	**99610.15D**
10	2500 [1]	200 [2]	2300	1760	850	1230	1630	1560	4300	265	70	519	A/B	**99610.30B**
10	2500 [1]	200 [2]	2300	1760	850	1090	1630	1560	4300	265	70	775	D	**99610.30D**
10	5000	200 [2]	3060	1760	870	1250	1630	1560	5800	380	100	594	A/B	**99610.80B**
10	5000	200 [2]	3060	1760	870	1090	1630	1560	5800	380	100	850	D	**99610.80D**
15	5000	200	3060	1760	870	1250	1630	1560	5800	380	100	594	A/B	**99615.80B**
15	5000	200	3060	1760	870	1090	1630	1560	5800	380	100	850	D	**99615.80D**

1) Comparable total sludge trap volume according to dimensioning of DIN EN 858

2) Eccentric reduction of inlet/outlet to DN 150 possible on site, fitted through DN 150 sample removal shaft

3. Installation

3.3 Installation example: KESSEL Coalescence separator

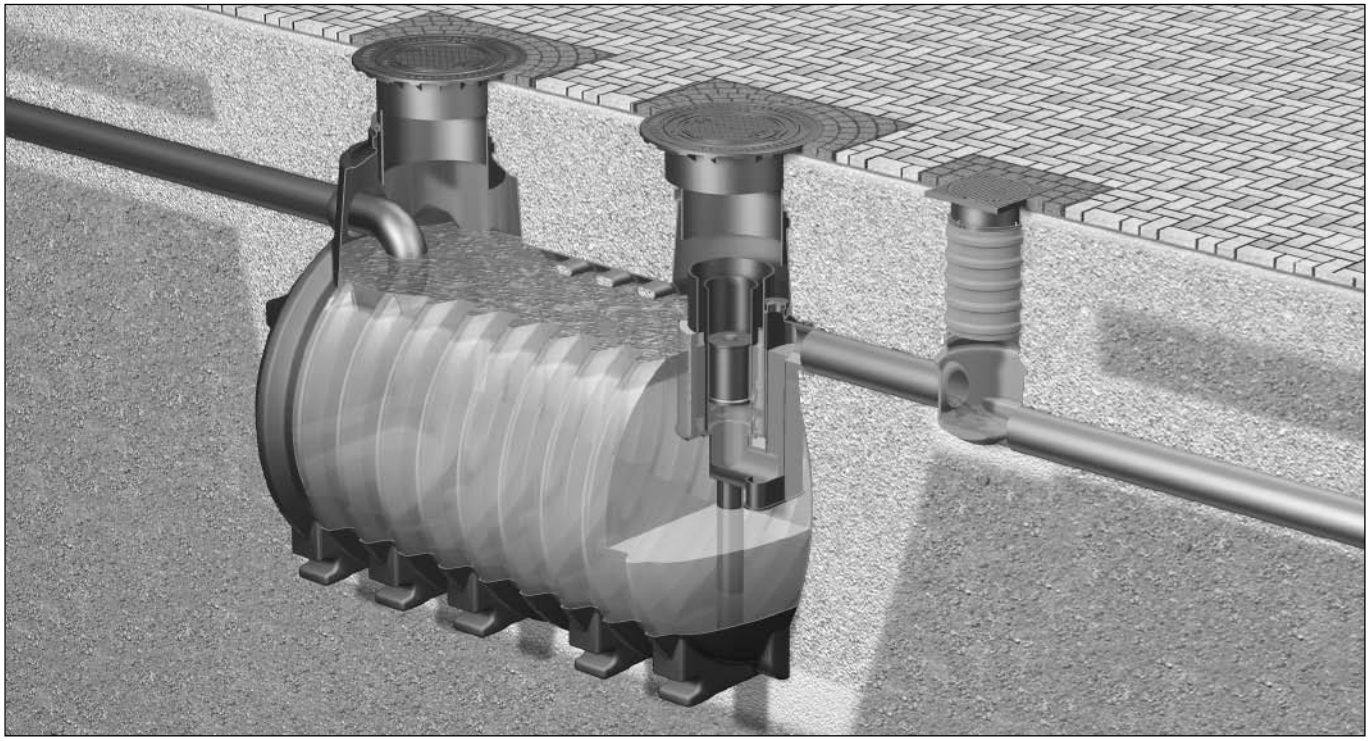
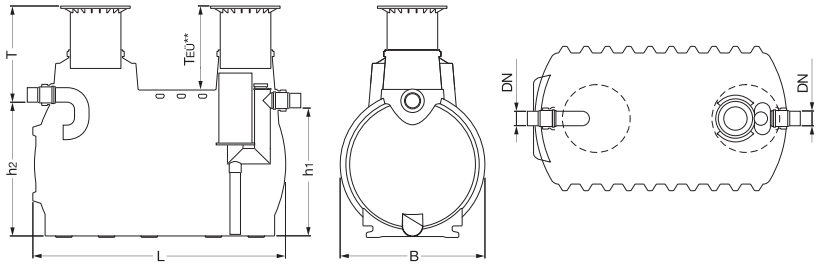


Illustration shows KESSEL-coalescence separator class I with cover class B and sampling chamber.

3.4 Dimensioned drawing



DN 150: T-$T_{EÜ}$ = 155 mm
DN 200: T-$T_{EÜ}$ = 180 mm
T-$T_{EÜ}$ = Height above ground
Klasse D: 700 mm ≤ $T_{EÜ}$ ≤ 1.500 mm
Klasse A/B: 700 mm ≤ $T_{EÜ}$ ≤ 1.800 mm

NS	Sludge trap (l)	DN	L in mm	B in mm	T in mm min	T in mm max	h_2 in mm	h_1 in mm	Total volume (l)	Oil storage (l)	Overstand (mm)	Weight (Kg)	Cover class	Art No.
3	1000	150	2080	1200	830	1240	1100	1040	1800	187	50	395	A/B	**99503.10B**
3	1000	150	2080	1200	840	1100	1100	1040	1800	187	50	651	D	**99503.10D**
6	2500 [1)]	200 [2)]	2300	1760	850	1230	1630	1560	4300	265	70	535	A/B	**99706.30B**
6	2500 [1)]	200 [2)]	2300	1760	850	1090	1630	1560	4300	265	70	791	D	**99706.30D**
6	5000	200 [2)]	3060	1760	870	1250	1630	1560	5800	380	100	610	A/B	**99706.80B**
6	5000	200 [2)]	3060	1760	870	1090	1630	1560	5800	380	100	866	D	**99706.80D**
10	1500	150	2860	1200	830	1240	1100	1040	2600	262	70	440	A/B	**99710.15B**
10	1500	150	2860	1200	840	1100	1100	1040	2600	262	70	696	D	**99710.15D**
10	2500 [1)]	200 [2)]	2300	1760	850	1230	1630	1560	4300	265	70	535	A/B	**99710.30B**
10	2500 [1)]	200 [2)]	2300	1760	850	1090	1630	1560	4300	265	70	791	D	**99710.30D**
10	5000	200 [2)]	3060	1760	870	1250	1630	1560	5800	380	100	610	A/B	**99710.80B**
10	5000	200 [2)]	3060	1760	870	1090	1630	1560	5800	380	100	866	D	**99710.80D**
15	5000	200	3060	1760	870	1250	1630	1560	5800	380	100	610	A/B	**99715.80B**
15	5000	200	3060	1760	870	1090	1630	1560	5800	380	100	866	D	**99715.80D**

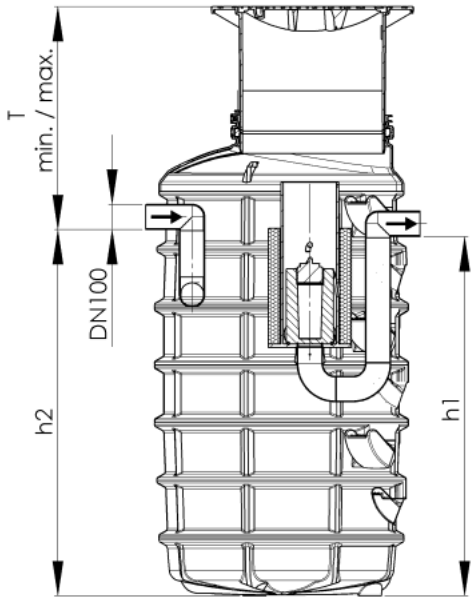
1) Comparable total sludge trap volume according to dimensioning of DIN EN 858

2) Eccentric reduction of inlet/outlet to DN 150 possible on site, fitted through DN 150 sample removal shaft

3. Installation

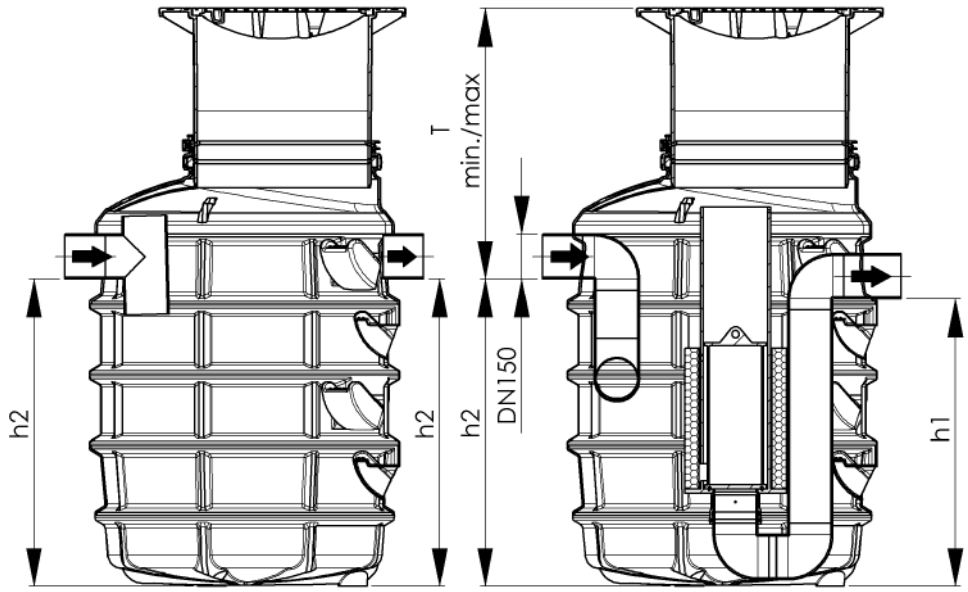
3.5 Illustration: KESSEL coalescence separator shaft LW 1000, NS 3

3.6 Dimension drawing of KESSEL coalescence separator shaft LW 1000, NS 3



NS	Sludge trap (l)	DN	Ø	T in mm min	T in mm max	h_2 in mm	h_1 in mm	Total volume (l)	Oil storage (l)	Overstand (mm)	Weight (Kg)	Cover class	Art No.
3	800	100	1100 Ø	545	995	1105	1055	790	200	110	175	B	99703.04B
3	800	100	1100 Ø	545	995	1105	1055	790	200	110	205	D	99703.04D
3	1600	100	1100 Ø	545	995	1605	1555	1390	200	110	190	B	99703.10B
3	1600	100	1100 Ø	545	995	1605	1555	1390	200	110	220	D	99703.10D

3.7 Dimensioned Drawing KESSEL-coalescence separator LW 1000, NS 6 (with upstream sludge trap)

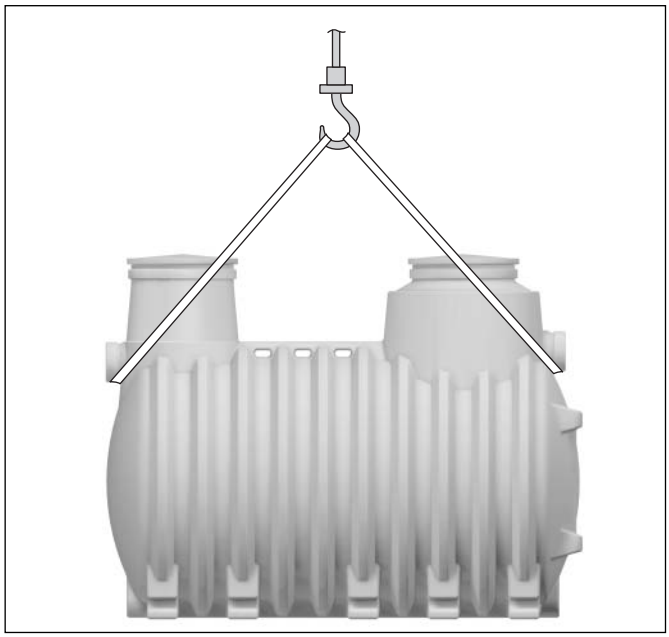


NS	Sludge trap (l)	DN	Ø	T in mm min	T in mm max	h_2 in mm	h_1 in mm	Total volume (l)	Oil storage (l)	Overstand (mm)	Weight (Kg)	Cover class	Art No.
6	1000	150	1100 Ø	560	1010	1090	1020	1580	200	110	305	B	99706.10B
6	1000	150	1100 Ø	560	1010	1090	1020	1580	200	110	338	D	99706.10D

4. Transport and Storage

Transportation of the KESSEL separator should be handled only by a transporter who has the proper knowledge, equipment and employees to handle such a product. During transport the separator must be firmly fixed into position and must not be allowed to move or shift in place. It also must be protected from other objects coming in contact with the separator during transport.

If and when the separator is lifted it is important to follow the following correct procedures: The separator is not to be lifted with the use of steel cables or chains. Proper equipment are heavy duty cloth or hemp straps designed to handle the corresponding loads. The separator should be lifted by placing the proper straps beneath the inlet and outlet of the separator as seen in the illustration. Do not lift the separator by the small holes between the two manholes covers as illustrated on this page. In instances where a forklift is used, secure the separator to the forklift with appropriate cloth / hemp securing straps.



Storage

In cases where the separator needs to be temporarily stored before installation, it is important that the separator is placed on firm level ground and in an area where it is protected from coming in contact with other objects. Storing the separator outdoors will not cause any problems.

5. Installation and assembly

During interim storage of the separator and up to the end of the installation work, suitable safety measures must be taken on the construction site to avoid accidents and damage to the light fluid separator.
The Chapter Safety Instructions must be observed!

5.1 Installation requirements

The installation must be carried only by companies who have the necessary specialist experience, suitable equipment and adequately trained personnel for the task.
The soil characteristics must be investigated for technical construction suitability (soil classification for technical construction purposes, DIN 18196). The maximum ground water level likely to occur must also be established. The ground water level must not exceed the level of the outlet. Adequate drainage of seepage water is also essential in the case of soils impermeable to water. The types of stresses occurring, such as maximum traffic loads and installation depth, must also be clarified.

The separators for ground installation should be installed outside the building, as near as possible to the outlets. If necessary, the connection pipes of the inlets to the separator should be laid with heat insulation, or heated. The required frost-free installation depth is achieved by the use of telescopic attachment pieces, which also allows easy adjustment to feed and outlet pipes (drainage system). The covers for the load classes A / B and D are not bolted and comply with EN 124.

Separator systems must be installed close to the point of origin of the light fluids. They must be easily accessible for cleaning and maintenance purposes.

The use of locked or ventilated covers is prohibited.

Pump or lifting systems must not be installed in the supply line in front of the separator. If these are necessary, they must be installed after the separator.

For the reliable operation of the system, KESSEL recommends the installation of a projection, and also a warning system. The necessary fitting requirements must be provided before filling of the construction pit.

Separator systems must be installed so that the upper edge of the covers is sufficiently high in comparison to the made level of the surfaces to be drained (see Figure 1).

The fluid level in the separator is always higher than the water level in the drainage system due to the difference in density between light fluid and water.

The definitive level is the highest possible standing rainwater height, when dirty water and rainwater are channelled together. If only dirty water is being fed in, the definitive level is the upper edge of the lowest connected outlet. The necessary projection depends on the nominal size of the separator (see Chapter on Technical Data).
If this excess height cannot be maintained, a warning device for light fluids must be installed.

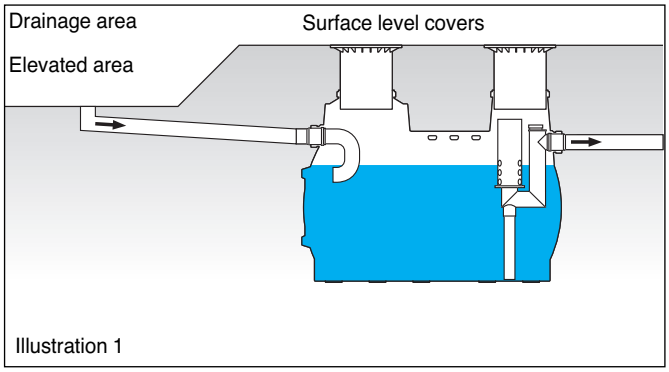


Illustration 1

Separator system ready for use

Light fluid separators must be protected against reverse flow from the drainage system.
KESSEL recommend the following protective precautions:

Outlet point	Separator	Reverse flow protection
Inside a building	Projection available	Reverse flow closure
Inside a building	No projection	Reverse flow closure
Outside a building	Projection available	Reverse flow closure
Outside a building	No projection	Lifting system

5. Installation and assembly

5.2 Filling material

The separator must only be installed in non-cohesive or low-cohesive soils (Group G1 to G2 to ATV-DVWU - A127).

Substrate:	Round-particle gravel (max. particle size 8/16) to DIN 4226-1
Tank bed:	Sand
Tank jacketing:	Round-particle gravel (max. particle size 8/16) to DIN 4226-1
Area outside tank jacketing:	Material with suitable properties
Covering layer:	Humus or similar

5.3 Construction pit

The foundation must be horizontal and level in order to be able to set up the system over the full surface, and must also afford adequate load-bearing capability. The substrate consists of compacted round-particle gravel (max. particle size 8/16, minimum depth 30 cm, Dpr=95%), covered by 3 - 10 cm of compacted sand. The spacing between the construction pit wall and the tank must be at least 70 cm. The embankments must be constructed to DIN 4124. The depth of the construction pit should be such that the limits of the earth covering are not exceeded.

MIN ≤ TEÜ ≤ MAX (see dimension drawing in the Chapter on Technical Data).

● Root penetration

In case of installation in the vicinity of trees or shrubbery, penetration by roots must be reliably prevented.

● Installation on a sloping site

In case of installation of the separator on a sloping site, care must be taken to ensure that the laterally-acting soil pressure of unsecured soil is absorbed by a suitably dimensioned supporting wall.

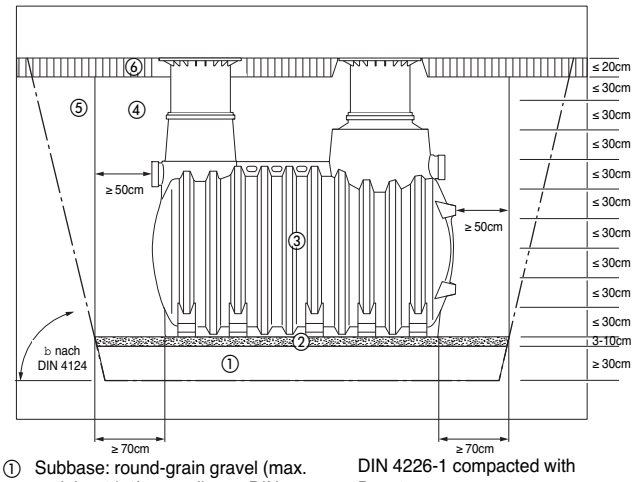
● Frost-free depth for all-year-round use

Always take care to observe the locally established frost-free depth when installing the separator. In order to ensure the smooth operation even in winter, the inlet and outlet pipes must also be laid at a frost-free depth during installation.

5.4 Tests before installation

Immediately before installation of the tank in the construction pit, the responsible specialist of the company carrying out the installation must test and certify the following:

- the integrity of the tank wall;
- the proper condition of the construction pit, in particular with regard to the dimensions and substrate bedding;
- the particle size of the filling material.



① Subbase: round-grain gravel (max. graining 8/16) according to DIN 4226-1 compacted with Dpr=95%
② Tank bed: compacted sand
③ Tank
④ Tank encasing: round-grain gravel (max. graining 8/16) according to DIN 4226-1 compacted with Dpr=95%
⑤ Area outside tank encasing: material of suitable consistence
⑥ Top layer: topsoil, road surface, concrete or similar

5.5 Installation

The float and coalescence insert, if fitted, remain in the tank during installation.

● Insertion

The tanks must be placed carefully in the construction pit with the aid of suitable lifting equipment and positioned on the substrate bedding (see also the Chapter “Transport”).

● Filling of the tank and the backfilling construction pit

In order to avoid deformation of the tank, the filling of the tank with water and the construction pit should take place in parallel.

The tank jacketing should be applied to a width of at least 50 cm. The backfilling around the tank should take place in 30 cm incremental layers. Each layer should be compacted with light compaction devices (min. Dpr=95%). Damage to the tank wall and displacement of the tank during and after installation must be avoided. The self-actuating closure keeps the system closed during the complete filling process.

● Connection of the tank

Any transport safety devices fitted must be removed. Note: the pipe connection fittings must be protected against damage in order to ensure the permanent integrity of the system. To make connection easier, the pipe connection fittings should be adequately greased.

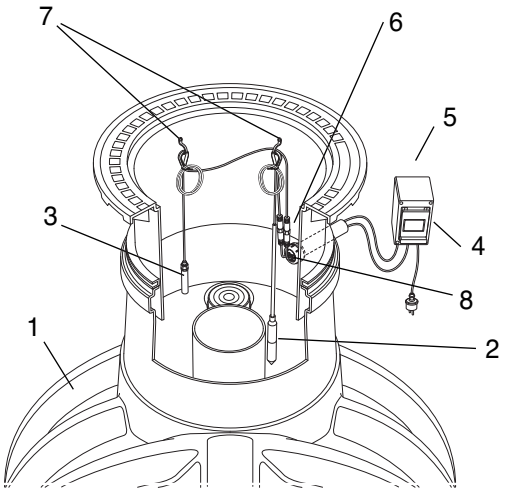
The transition from downpipes to horizontal pipes must be made using two 45° elbows separated by an intermediate pipe at least 250 mm long. A calming section must be installed in front of the separator system, which must be at least 10x as long as the nominal width of the feed pipe.

5. Installation and assembly

When the construction pit has been filled and compacted to the lower edge of the feed and outlet connections, the feed and outlet pipes are laid frost-free and connected.
Instructions for the warning system: Lay the connection cable or empty pipe during the earthworks.

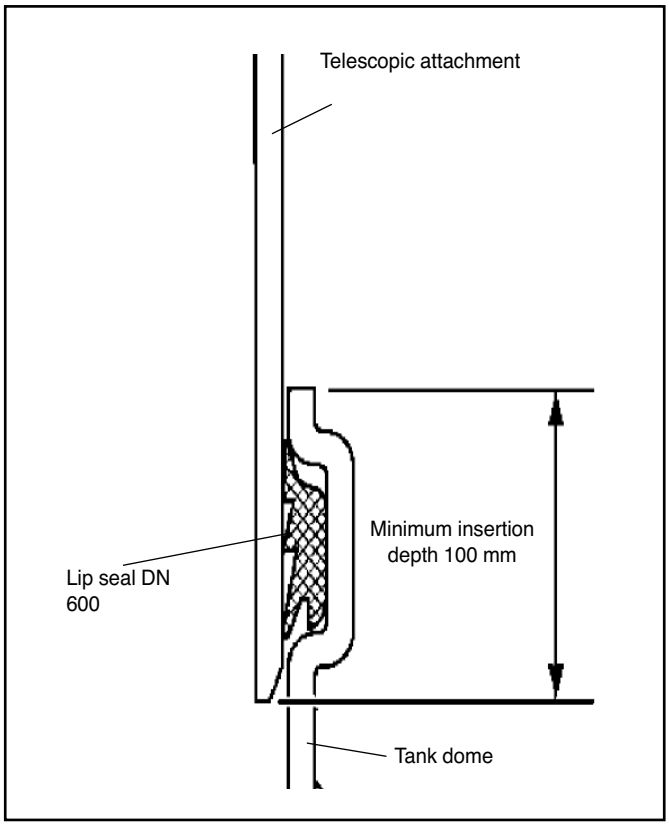
● **Connection of the sample removal shaft.**
Sample removal devices must be installed in the direction of flow immediately after the separator. The sample removal device of the separator system must be freely accessible and positioned so that only waste water is removed which has passed through the separator.

● **Connection of the warning system empty pipe, if applicable**
The connecting section between the separator and control unit must be kept as short as possible.
Unnecessary changes of direction, in particular those with angles above 45°, should be avoided.
The empty pipe for the cable should have a continual slope down to the separator.
The formation of condensation within the empty pipe can be minimised by an airtight closure of the empty pipe on the side of the control unit. A cable pull-through wire can also be laid for subsequent cable laying.



(1) KESSEL light fluid separator
(2) Layer thickness sensor
(3) Reverse flow sensor
(4) Control unit
(5) Housing for wall installation
(6) Watertight cable connection
(7) Attachment set
(8) Empty pipe closure

● **Insert the lip seal DN 600** in the groove in the dome



and apply grease
● **Insert the telescopic KESSEL** upper section into the opening of the separator and adjust to the required position. With the aid of the clamping ring, the upper section can now be fixed in the required position (aligned with the upper ground level). The fine adjustment to the final height is then made with the aid of the setscrews. Slopes can easily be compensated for by the fully height-adjustable and inclining upper section. The upper section must be adequately supported from underneath and vibrated in using a flat-bed vibrator and a steel plate laid on the upper section.
For greater installation depths, the special KESSEL intermediate piece (Art. no. 917402), height 400 mm, intended for this purpose should be used.

● **remaining filling**
For installation in areas of heavy vehicle traffic (cover class D), a reinforced concrete slab must be provided as the upper layer. A corresponding formwork and reinforcement plan is available from KESSEL.

5. Installation and assembly

5.6 Warning system

As specified by DIN EN 858, separator systems must be equipped with self-actuating warning devices.

The KESSEL warning systems Art. no. 917801, 917802 and 917806 are alarm devices for light fluid separators (fuel, coalescence and oil separators). They are approved for operation in areas subject to the risk of explosion, Zone 0.

KESSEL alarm system for oil layer monitoring (detection of the layer thickness in oil and light fluid separators)

Oil layer probe suitable for Ex-Zone 0 with 5 m connection cable (extendible up to max. 200 m), attachment set for easy installation and maintenance (the probe is accessible from above), watertight cable connector for extension of the connection cable, through-pipe with screw closure and two screw-type cable connectors, housing for wall mounting IP 65, control unit with visual and acoustic alarm with potential-free contact, with sensor self-monitoring and alarm repetition.

KESSEL alarm system for limit value display (detection of backing up in the light fluid separator)

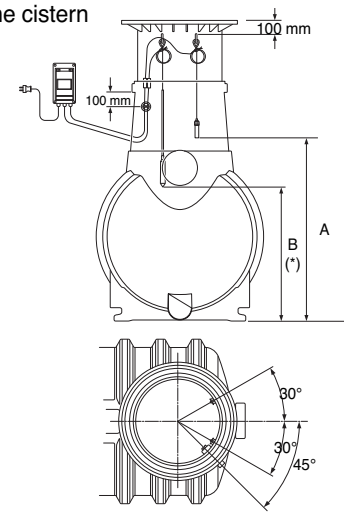
Limit value probe suitable for Ex-Zone 0 with 5 m connection cable (extendible up to max. 200 m), attachment set for easy installation and maintenance (the probe is accessible from above), watertight cable connector for extension of the connection cable, through-pipe with screw closure and two screw-type cable connectors, housing for wall mounting IP 65, control unit with visual and acoustic alarm with potential-free contact, with sensor self-monitoring and alarm repetition.

The sensors of the warning system must be fitted at different height levels, depending on the size of the separator. The installation dimensions are shown in the table.

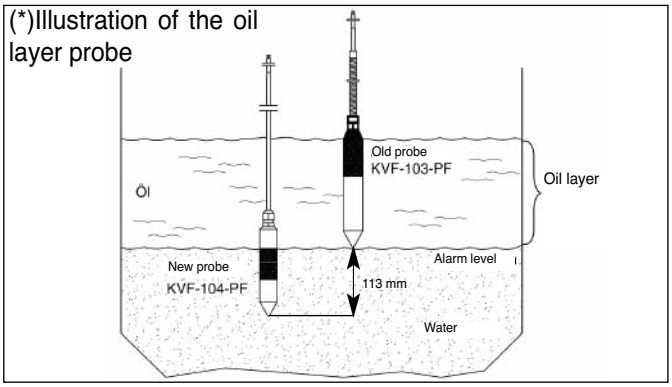
The specified values must be checked during the course of regular maintenance, and corrected if necessary.

The installation and maintenance of the warning system is described in the enclosed original operating instructions.

Illustration of the cistern



(*)Illustration of the oil layer probe

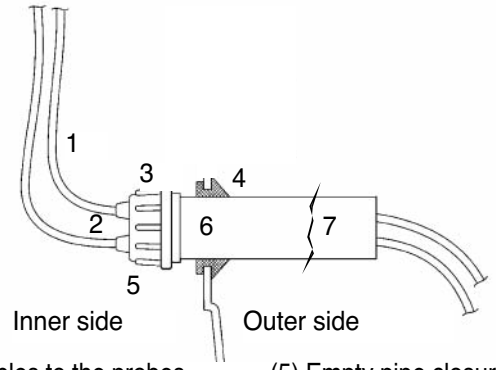


Light fluid separator Art. No. Art. No.				Distance A of the limit value probe from the tank bottom	Distance B of the oil layer probe from the tank bottom
99403.10B	99403.10BEX	99503.10B	99503.10BEX	1340 mm	835 mm
99403.10D	99403.10DEX	99503.10D	99503.10DEX		
99610.15B	99610.15BEX	99710.15B	99710.15BEX		
99610.15D	99610.15DEX	99710.15D	99710.15DEX		
99606.30B	99606.30BEX	99706.30B	99706.30BEX	1820 mm	1335 mm
99606.30D	99606.30DEX	99706.30D	99706.30DEX		
99610.30B	99610.30BEX	99710.30B	99710.30BEX		
99610.30D	99610.30DEX	99710.30D	99710.30DEX		
99606.80B	99606.80BEX	99706.80B	99706.80BEX		
99606.80D	99606.80DEX	99706.80D	99706.80DEX		
99610.80B	99610.80BEX	99710.80B	99710.80BEX		
99610.80D	99610.80DEX	99710.80D	99710.80DEX		
99615.80B	99615.80BEX	99715.80B	99715.80BEX		
99615.80D	99615.80DEX	99715.80D	99715.80DEX		
99703.04B				1230 mm	764 mm
99703.04D				1230 mm	764 mm
99703.10B				1730 mm	1264 mm
99703.10D				1730 mm	1264 mm

5. Installation and assembly

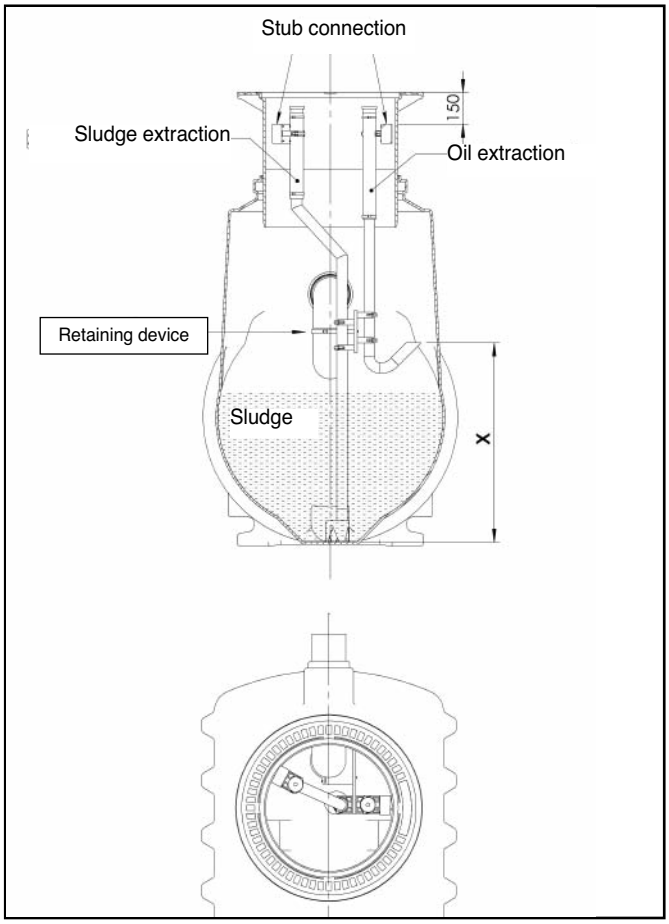
Note: The holes for the attachment set must be drilled only at the specified positions. The holes must be made using a 3.5 mm diameter drill. The original attachment screws must be used in the attachment, without plugs.
The positions of the holes should be adjusted accordingly if the seal might be damaged by the drill. Under no circumstances must the cone of the rotation tank be damaged or drilled through!
The extension of the cable to max. 200 m is only possible using original parts (cable and cable connectors).
Information can be obtained from the KESSEL Customer Service Department under telephone no. 0 18 05-27 82 82.
The use of any parts other than KESSEL original parts will invalidate the ATEX approval, the construction type approval and any guarantee claims against KESSEL.

When drawing in the cable into the empty pipe to the control unit, the cable screw connections on the empty pipe closure must be tightened firmly. The union nut must then be fixed to the end of the pipe.



(1) Cables to the probes
(2) Cable screw-fittings
(3) Union nut
(4) Through-seal
(5) Empty pipe closure
(6) Through-pipe
(7) Empty pipe

5.7 Oil and sludge extraction
(for shaft LW 1000 on request only)
For normal disposal, the hose from the suction vehicle is held in the light fluid separator and the complete contents pumped out.
The volume of light fluid is however significantly less than the total volume of the separator. Assistance is provided in this case by the oil extraction device.
For disposal of the light fluid, the suction hose is connected to the oil extraction device. The suction vehicle can then remove only the volume corresponding to the maximum light fluid quantity.
This means a significant reduction of the disposal quantity, which together saves both time and disposal costs, and causes less wear to the separator components. In the same way as the oil extraction device, the disposal quantity can also be significantly reduced by the sludge extraction device.
This is beneficial particularly for businesses with a high level of sludge. The complete separator can of course also be emptied by the sludge extraction device.
If both devices are used for disposal, it must be ensured that the oil is disposed of first, followed by the sludge.
The retaining device is attached at the inlet, using the pipe clamp as shown in the drawing.
Fit the oil extraction to the retaining device, set to the required height x (see Table) and fix in position.



Fit the sludge extraction to the retaining device, feed to the bottom and then fix in position.
Fit the stub connections to the attachment as shown in the drawing using the stainless steel screws provided.

5. Installation and assembly

The holes must be made using a 3.5 mm diameter drill. Use the stub connection as a drilling template.
Fit the knuckle coupling to the end of the hose and fix with a hose clamp.
Hook the hose with the knuckle coupling upwards in the stub connection, lead to the extraction device and adjust to the required length.
Connect the hose and extraction device and fix using a hose clamp.
When the cover is closed, it must not be in contact with the knuckle coupling.

Light fluid separator Art. No.				Distance X of the oil extraction from the tank bottom
99403.10B	99403.10BEX	99503.10B	99503.10BEX	950 mm
99403.10D	99403.10DEX	99503.10D	99503.10DEX	
99610.15B	99610.15BEX	99710.15B	99710.15BEX	
99610.15D	99610.15DEX	99710.15D	99710.15DEX	
99606.30B	99606.30BEX	99706.30B	99706.30BEX	1450 mm
99606.30D	99606.30DEX	99706.30D	99706.30DEX	
99610.30B	99610.30BEX	99710.30B	99710.30BEX	
99610.30D	99610.30DEX	99710.30D	99710.30DEX	
99606.80B	99606.80BEX	99706.80B	99706.80BEX	
99606.80D	99606.80DEX	99706.80D	99706.80DEX	
99610.80B	99610.80BEX	99710.80B	99710.80BEX	
99610.80D	99610.80DEX	99710.80D	99710.80DEX	
99615.80B	99615.80BEX	99715.80B	99715.80BEX	
99615.80D	99615.80DEX	99715.80D	99715.80DEX	
99703.04B 99703.04D 99703.10B 99703.10D				On request

6. Commissioning

The chapter "Safety instructions" must be heeded.

6.1 Setting up for operation
Before the separator is put into operation, please make sure that:

- the separator is clean and the interior is free from any objects which may have been placed inside during shipping or installation.
- the separator is completely filled with clean cold water. Completely filling the separator is complete when water begins to drain from the outlet.

6.2 Initial Instructions

Placing the separator into full operation is normally handled by a licensed tradesman although upon request can be handled by a KESSEL representative.
The following personnel should be on hand when the initial instructions for placing the separator into operation are given:

- Building facilities manager
- Building maintenance workers
- Contracted plumber / tradesman
- Contracted disposal company

What to do:

- Check to make sure the separator is completely watertight. Check to make sure that during transport and installation that no damage to the separator was caused. Check to make sure all connections to the separator (inlet, outlet, refill, rinse pipes etc.) are in perfect working order.
- Representative should discuss all necessary information regarding the disposal.
- Representative should take the customer step by step through all stages of a separator disposal.
- After the separator has been emptied (disposed) all necessary paperwork and documentation should be handed over to the customer.
- The separator should be returned to service by filling the separator with fresh, cold water.

6.4 Hand-over of installation and user's manual.

6.5 Completion of the commissioning report.

After commissioning has been completed the separator should be placed into normal operation mode.
6.3 Commissioning report (see attachment)

7. Disposal

Disposal intervals:
The fuel / oil collected in the separator should be collected / disposed when the level has reached 80% of the maximum storage capacity. Disposal of collected sludge in the base of the separator should be collected / disposed when the level has reached 50% of the maximum sludge storage capacity.

Important: Timely disposal of the separator is mandatory to insure proper function and operation of the separator.

A licensed disposal company should be contracted to handle disposal of the separator. Disposal should take place when little or no wastewater is entering the separator.

Emptying intervals:
The light fluid retained in the separator must be removed at the latest when the quantity of separated light fluid reaches 80% of the maximum storage quantity, or the level is below the retained volume. For separators simultaneously or exclusively used for the drainage of systems or areas where light fluids are handled (e.g. fuelling areas), the retained volume required under state regulations must also be provided. The separated light fluid must also be removed at levels below this retained volume if the quantity of separated light fluids has not yet reached 80 % of the maximum storage quantity.
The disposal of the sludge contained in the sludge trap must be removed at the latest when the separated sludge quantity reaches half of the sludge trap volume.

Note: Light fluids and sludge must be removed as specified above in order to ensure the correct operation of the system.
For this reason, a disposal contract should be concluded with a specialist disposal company. The disposal work should be carried out if possible when the system is not in operation.

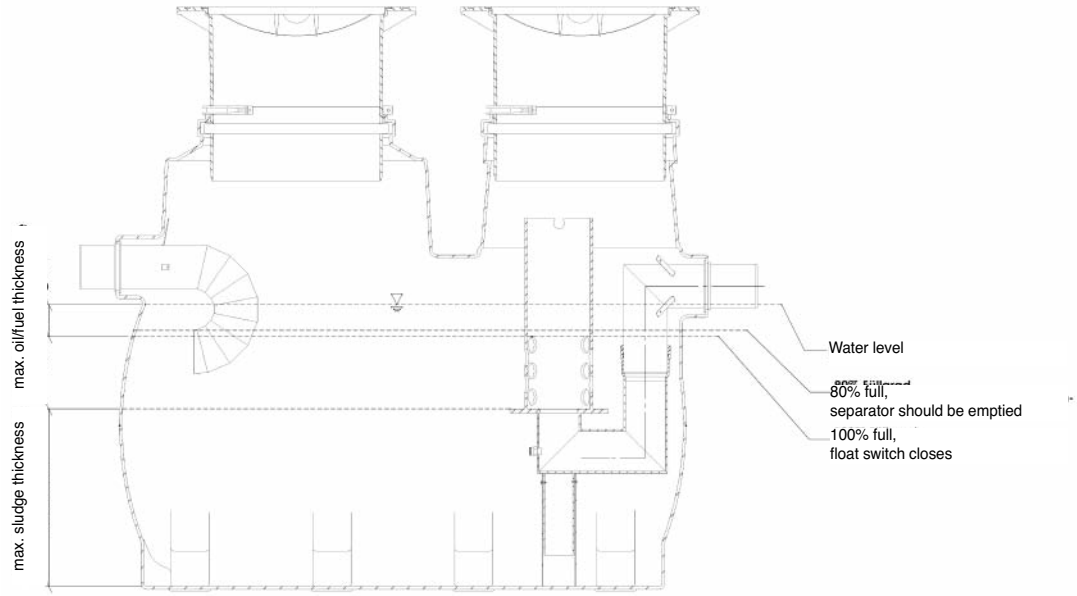
Expected disposal volumes in accordance with the filling level can be estimated by means of the following table.
The figures contained in the table are approximate figures only for the purposes of estimating quantities when contracting a specialist disposal company.

7. Disposal

Oil-/fuel Separator Art.-Nr.:	Sludge			Oil-/Fuel		
	1) Filling level in %	Measured layer thickness in mm	Disposal volume in litres	2) Filling level in %	Measured layer thickness in mm	Disposal volume in litres
99403.10B 99403.10BEX 99503.10B 99503.10BEX	50	650	1000	100	131	187
99403.10D 99403.10DEX 99503.10D 99503.10DEX	40	530	800	80	105	150
	30	430	600	60	79	112
	20	330	400	40	52	75
	10	210	200	20	26	37
99610.15B 99610.15BEX 99710.15B 99710.15BEX	50	650	1500	100	131	262
99610.15D 99610.15DEX 99710.15D 99710.15DEX	40	550	1200	80	105	210
	30	450	900	60	79	157
	20	340	600	40	52	105
	10	220	300	20	26	52
99606.30B 99606.30BEX 99706.30B 99706.30BEX	50	1100	3000	100	138	265
99606.30D 99606.30DEX 99706.30D 99706.30DEX	40	930	2400	80	110	212
99610.30B 99610.30BEX 99710.30B 99710.30BEX	30	760	1800	60	83	159
99610.30D 99610.30DEX 99710.30D 99710.30DEX	20	580	1200	40	55	106
	10	370	600	20	28	53
99606.80B 99606.80BEX 99706.80B 99706.80BEX	50	1100	4000	100	138	380
99606.80D 99606.80DEX 99706.80D 99706.80DEX	40	910	3200	80	110	304
99610.80B 99610.80BEX 99710.80B 99710.80BEX	30	740	2400	60	83	228
99610.80D 99610.80DEX 99710.80D 99710.80DEX	20	560	1600	40	55	152
99615.80B 99615.80BEX 99715.80B 99715.80BEX	10	350	800	20	28	76
99615.80D 99615.80DEX 99715.80D 99715.80DEX						
99703.04B 99703.04D	50	400	550	100	235	200
	40	320	369	80	188	160
	30	240	305	60	141	120
	20	160	241	40	94	80
	10	80	177	20	47	40
99703.10B 99703.10D	50	800	1050	100	235	200
	40	640	815	80	188	160
	30	480	587	60	141	120
	20	320	369	40	94	80
	10	160	241	20	47	40
99706.10B 99706.10D	50	400	550	100	235	200
	40	320	369	80	188	160
	30	240	305	60	141	120
	20	160	241	40	94	80
	10	80	177	20	47	40

1) The sludge retained in the separator must be disposed of at the latest at a filling level of 50%.

2) The light fluid retained in the separator must be disposed of at the latest at a filling level of 80%, or when the retained volume is exceeded.



	INSTALLATION	*SELF-CHECK*	*MAINTENANCE*	*DISPOSAL*	*GENERAL INSPECTION*	*REPAIR*
Who	Specialist company	Specialist	Specialist company or works customer service [1]	Disposal company	Qualified body	Specialist company
What		Measurement of the layer thickness of : · light fluid · of the sludge layer Check of the self-actuating closure and warning device	Measurement of the layer thickness of : · light fluid · of the sludge layer Check of the self-actuating closure and warning device · Emptying and cleaning, if necessary · Cleaning of the sample removal device · Check of the operating logbook	Removal of light fluid and sludge The waste disposal regulations must be observed!	⇛ Complete emptying ⇛ Cleaning ⇛ Check for proper condition and proper operation, and at least however: - Safety against the escape of light fluids from the separator system or the shaft units (excess height) - Structural condition and integrity of the separator system - Condition of the installed parts and the electrical equipment - Calibration of the self-actuating closure device - Completeness and plausibility of the records in the operating logbook - Disposal confirmations of the materials removed - Availability and completeness of the required approvals and documentation If the separator system is also used for the treatment of commercial waste water or waste water from the cleaning of vehicles, the following points must also be checked: - Actual volume of waste water (origin, quantity, contents, cleaning agents, operating materials, avoidable of stable emulsions) - Dimensioning, suitability and performance of the separator systems.	
When		monthly	6-monthly	Light fluid 80% is reached or the level is below the retained volume Sludge collection chamber is full	Before commissioning, then every 5 years	-As required
Documentation	Installation certification by specialist	operating logbook	Maintenance report	operating logbook Maintenance report	Test report	operating logbook

* If the general inspection is carried out at shorter intervals than 5 years, the maintenance must be carried out by a specialist.

8. Maintenance and Controls

The Chapter “Safety instructions” must be observed!

8.1 Maintenance

● The separator system must be maintained annually by a specialist 1).

In addition to the removal of materials, the following work must also be carried out:

- Check of the inner wall surfaces of the sludge trap and the grease separator,
- Functional check of the electrical devices and installations, if fitted.
- The findings and work carried out must be recorded in the operating logbook and evaluated.

● If fitted, electro-mechanical assemblies such as pumps, valves, shut-off devices etc. must be maintained twice yearly in accordance with the manufacturers’ instructions.

8.2 Checking (general inspection)

Before commissioning, and then at regular intervals of no more than 5 years, the separator system must be completely emptied and cleaned, and then checked by a specialist 2) for proper condition and operation.

The following points at least must be checked and recorded:

- Assessment of the separator system
- Structural condition and integrity of the separator system
- Condition of the inner wall surfaces of the installed parts and the electrical equipment, if fitted
- laying of the feed pipe of the separator system as a ventilation pipe over the roof
- Completeness and plausibility of the records in the operating logbook
- Confirmation of the proper disposal of the materials removed from the separator system
- Availability and completeness of the required approvals and documentation (approvals, drainage plans, operating and maintenance instructions

A checking report must be compiled on the checks performed, noting any existing faults. If faults are discovered, these must be rectified immediately.)

[1] A “specialist” in this sense refers to personnel of the operator or other company, who by means of their training, skills and experience obtained from practical work, ensure that they carry out assessments or checks in the relevant specialised field to the required standard.

A specialist can acquire the specialist knowledge required for the operation and maintenance of separator systems in a training course with the following on-site instruction, which is offered for example by the corresponding manufacturers, professional trade associations, chambers of commerce and expert organisations in the field of separator technology.

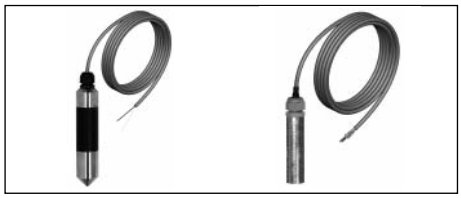
[2] A “specialist” in this sense refers to personnel of business other than the operator, experts or other institutions which demonstrably have the specialist skills required for the operation, maintenance and checking of separator systems. In individual cases, such as larger operating units for example, these checks can also be carried out by internally independent specialists of the operator not bound by instructions with regard to their area of responsibility, who have equivalent qualifications and technical equipment.

Qualified bodies are specialist businesses independent of the operator or similar institutions, whose employees demonstrably have the specialist skills required for the operation, maintenance and checking of separator systems to the extent specified here, together with the technical equipment for the checking of separator systems.

In individual cases, such as larger operating units for example, these checks can also be carried out by internally independent specialists of the operator not bound by instructions with regard to their area of responsibility, who have equivalent qualifications and technical equipment.

Article	Order No.
General inspection of oil/coalescence separator	**917 411/L**
Operating logbook of oil/coalescence separator	**917 812**

9. Accessories / Replacement parts



KESSEL alarm system set

Oil/fuel level monitoring device (see Art. no. 917801) and
back up / over flow monitoring device (see Art. no. 917802).

Art.No.
917 806

KESSEL Oil / fuel level monitoring device.

5 meter connection cable (extendable up to 200 meter), installation set, watertight cable connection, conduit access insert, IP 54 control unit housing, plug in ready, with LED and audible alarm and potential free contact.

Art.No.
917 801

KESSEL back up / overflow monitoring device.

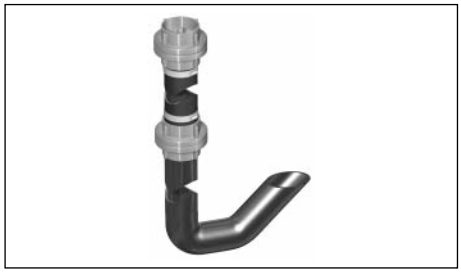
5 meter connection cable (extendable up to 200 meters) installation set, watertight cable connection, conduit access insert, IP 54 control unit housing, plug in ready, with LED and audible alarm and potential free contact..

Art.No.
917 802

KESSEL alarm system cable

for extension of the KESSEL oil layer probe and KESSEL limit value probe.

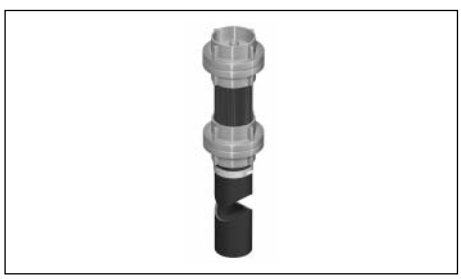
Art.No.
917 810



KESSEL Oil Suction System

Suction pipe B 50 with Bi 50 suction hose for on-site connection to interior of upper section, with Storz 52 C connection coupling.

Inlet	Art.No.
DN 150	917 803
DN 200	917 808



KESSEL Sludge Extraction System

Suction pipe B 50 with sludge suction funnel, 0.5m re-enforced suction hose Bi 50 for on-site connection to interior of upper section, with Storz 52 C connection coupling..

Inlet	Art.No.
DN 150	917 804
DN 200	917 809

9. Accessories / Replacement parts

KESSEL-Coalescence filter insert

Art.No.
917 805

KESSEL-Coalescence filter replacement part
for KESSEL-Coalescence separator LW 1000

Art.No.
917 816

10. Warranty

1. In the case that a KESSEL product is defective, KESSEL has the option of repairing or replacing the product. If the product remains defective after the second attempt to repair or replace the product or it is economically unfeasible to repair or replace the product, the customer has the right to cancel the order / contract or reduce payment accordingly. KESSEL must be notified immediately in writing of defects in a product. In the case that the defect is not visible or difficult to detect, KESSEL must be notified immediately in writing of the defect as soon as it is discovered. If the product is repaired or replaced, the newly repaired or replaced product shall receive a new warranty identical to that which the original (defective) product was granted. The term defective product refers only to the product or part needing repair or replacement and not necessarily to the entire product or unit. KESSEL products are warranted for a period of 24 month. This warranty period begins on the day the product is shipped form KESSEL to its customer. The warranty only applies to newly manufactured products. Additional information can be found in section 377 and 378 of the HGB.

In addition to the standard warranty, KESSEL AG offers an additional 20 year warranty on the polymer bodies of class I / II fuel separators, grease separators, inspection chambers, wastewater treatment systems and rainwater storage tanks. This additional warranty applies to the watertightness, usability and structural soundness of the product.

A requirement of this additional warranty is that the product is properly installed and operated in accordance with the valid installation and user's manual as well as the corresponding norms / regulations.

2. Wear and tear on a product will not be considered a defect. Problems with products resulting from improper installation, handling or maintenance will also be considered a defect.

Separator Characteristics

KESSEL

Bahnhofstr. 31
D-85101 Lenting

Type _____

Production number / production year_____

Weight/kg_____length x width X height_____

EN ___ _____Approval_____

_____

Sludge trap volume / l _____Oil/fuel storage volume / l _____

Control stamp_____Material_____

(Accessories) _____

This unit has been checked for watertightness to be sure that it is fully operational before leaving the factory.

_____ _____

Date Name of examiner

Important contacts / Info

Separator Type: _____

Day / Hour _____

Project description /Building services supervisor _____

Address _____

Telephone / Fax _____

Builder _____

Address _____

Telephone / Fax _____

Planner _____

Address _____

Telephone / Fax _____

Contracted plumbing company _____

Address _____

Telephone / Fax _____

KESSEL-Commissions no.:

System operator /owner _____

Address _____

Telephone / Fax _____

User _____

Address _____

Telephone / Fax _____

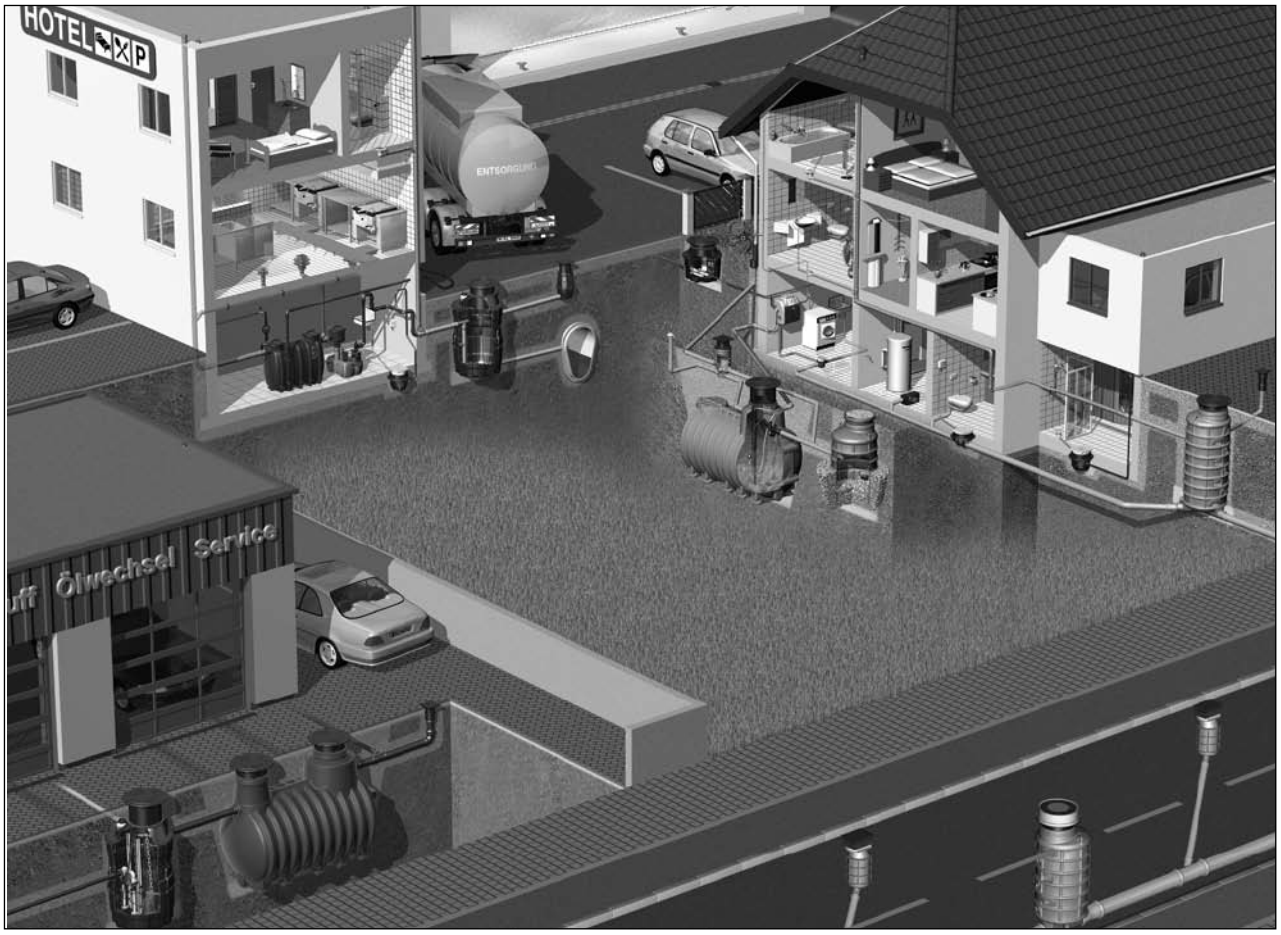
Person of delivery _____

Other remarks _____

The system operator, and those responsible, were present during the commissioning of this system.

_____	_____	_____
Place and date	Signature owner	Signature user

Everything for drainage



- Backwater valves and cleanouts
- Polymer and Ecocast drains
- Volatile liquid traps
- Lifting stations, pumps, warning and control units
- Rainwater management systems
- Grease separators
- Oil/fuel and coalescence separators
- Inspection chambers
- Custom projects for industrial applications

KESSEL